

## Integrated Learning and Research Across Disciplinary Boundaries

# Engaging Students

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AS CAMPUSES ACROSS THE COUNTRY explore ways to strengthen interdisciplinary studies and involve undergraduates in research, questions emerge about how best to integrate existing course offerings and majors, develop curricular rigor and agility, and strengthen administrative coordination. The structural obstacles to crossing disciplinary boundaries and integrating the

curriculum are real, but they often cloud

the larger conceptual task or vision that must come first. In *Integrative Learning: Mapping the Terrain*, Mary Taylor Huber and Pat Hutchings (2004, 1) note that while “many colleges and universities are creating opportunities for more integrative, connected learning,” often such innovations “exist in isolation, disconnected from other parts of the curriculum and from other reform efforts.” In addition, the programs that are implemented typically have their own faculty and staff advocates who act independently of the university’s central priorities for undergraduate education (Schoem 2002).

In this article, we discuss two successful initiatives to integrate interdisciplinary study and participation in research into the core mission of undergraduate education at the University of Texas (UT) at Austin. The first of these, the Forum Seminars, introduces students to specific cross-disciplinary topics and faculty in these areas. The second, the Bridging Disciplines Programs (BDP), takes students a step further by using the forum seminar as a foundation

course for an eighteen-to-twenty-four hour interdisciplinary certificate program that complements the student’s major and is built around general education requirements, electives, and research.

The vision for these initiatives emanates from the university’s identity as a large and diverse research institution and its desire to provide the majority of its students with the kinds of unique educational opportunities that have typically been reserved for honors students. Our goals were two-tiered: first, we wanted to develop programs that weave research and cross-disciplinary perspectives into the fabric of students’ undergraduate education, and second, in doing so, we wanted to ensure the sustainability and effectiveness of these programs by building on the existing faculty research strengths and course offerings. Before describing these programs in more detail, we first identify the key factors or guiding principles that we believe are central to the success of the initiatives.

**Build on existing resources.** UT Austin serves the largest undergraduate student body in the nation, with baccalaureate degrees in eleven schools and colleges and more than 130 majors. With ten thousand courses offered each semester, UT Austin provides immense resources for learning, and particularly learning across disciplines. It also has a large and diverse faculty involved in a broad array of research endeavors and interdisciplinary collaborations. However, it is this immensity of choice that makes it difficult for students to take full advantage of those resources on their own.

In order to capitalize on the size and scope of the curriculum, UT Austin needed to offer students some navigational tools. Rather than

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**University  
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create numerous new courses, we conceptualized a set of roadmaps through UT's already rich curriculum. These routes were designed to help students construct meaningful intellectual narratives for connecting their coursework across disciplines and to research throughout the years of their undergraduate experience.

**Make research and creative innovation central.**  
Although a small number of students have

traditionally found research placements through informal channels, we recognized the need to create more accessible and transparent paths to undergraduate participation in research. While such paths did not have much precedent at the university, the process of obtaining "buy-in" from the schools and colleges was made easier by the fact that research is so central to the university's identity. Moreover,

many of the innovations we designed to facilitate the two initiatives also benefited different constituencies across the university.

For example, a highly visible, university-wide searchable database of faculty research interests was developed with both undergraduate student users and faculty in mind ([www.utexas.edu/research/eureka](http://www.utexas.edu/research/eureka)). Interdisciplinary in its design, the database allows students and faculty to learn about research inside and outside their home departments. In this way, it integrates efforts to involve undergraduates in research and efforts to break down barriers to cross-disciplinary study and collaboration. Similarly, the addition of undergraduate research courses to the course catalog enabled students to get credit for research participation with faculty in departments across campus and offered the schools and colleges a visible credit-based way to communicate involvement in faculty research as an option for their students.

#### **Focus on general education requirements.**

Across all of the university's colleges/schools and majors, students may choose from a rich array of humanities, social science, and natural science courses to fulfill general education requirements. While general education requirements theoretically provide the opportunity to achieve a cross-disciplinary perspective that complements the specialization of the major, in practice these requirements often function as unconnected fragments. As the authors of the *Greater Expectations* report suggest, "the student assembles an assortment of courses, each carrying a defined number of credits and assuming a standard time in class. . . . There is little internal coherence in curricula or programs, and even less a plan for connected learning" (AAC&U 2002, 16). Thus, the creative and purposeful organization of general education requirements within cross-disciplinary frameworks became central to our vision for developing enduring models of interdisciplinary study.

**Engage a diverse group of motivated students.** A central question concerned which students we wanted to attract to the BDPs and whether we needed to establish GPA or other requirements in order to select students who would successfully complete the programs. The clear consensus was to move away from a GPA or other requirement and instead to develop an application process in which students are invited to begin to articulate their own visions for their undergraduate education. As part of

the required application process, students meet with the BDP coordinator and the academic adviser for the BDP program. These individuals provide guidance and feedback throughout the application process, which includes an essay describing the motivations for completing a BDP and a proposal for coursework and research experiences.

Because degree requirements vary with majors, it was also necessary to create a flexible set of programs that enables students to engage in different ways, depending on their interest and the flexibility of their degree plan. While some students may choose to create an interdisciplinary concentration that includes participation in research, other students, particularly those in preprofessional programs with extensive degree requirements, may only be able to participate by enrolling in a one-hour cross-disciplinary seminar or receiving assistance from the research coordinator in using our searchable research database to become involved in research opportunities.

**Provide a series of experiences that build upon each other.** One of the greatest advantages of undergraduate participation in faculty research is its potential to increase the student's awareness of academic opportunities and resources, including faculty, courses, scholarships, conferences, and summer programs. Clearly this awareness will be most beneficial if it is not reserved for the senior year. Similarly, students who begin participating in internships early in their undergraduate education will have more room for thoughtful reflection on potential careers and more opportunities to take advantage of career advising and coursework that can supplement that reflection. At a time when higher education was trending toward "capstone" experiences, we wanted to create programs that would allow students to integrate the benefits of participation in research and internships into all four years of an undergraduate education.

**Establish close relations with the colleges and departments and their faculty.** The guiding vision for both initiatives was developed by a cross-college committee of highly regarded members of the faculty working closely with the provost and the vice provost. That committee designed the forum seminars to involve a range of faculty from different fields and endorsed the concept of bridging disciplines programs in cutting-edge interdisciplinary areas that would be governed

by cross-disciplinary faculty panels. Making these programs a reality required closely collaborating with the colleges and departments and involving their top faculty who, through their participation, could communicate the importance of this initiative for the university.

Research is central to our vision for cross-disciplinary programs, and conveying interest in faculty research was central to working with colleges and departments in recruiting faculty to the BDP panels. For each BDP area identified, the vice provost contacted deans and department chairs to inquire about particular senior and junior faculty who could serve on the faculty panel and to determine which other members of their faculty might be a good fit by virtue of their teaching interests and scholarship. Invitations were then sent to the faculty indicating why they were selected and the relevance of their teaching and research interests, describing the significance of the program to the university, and explaining that they would be part of a cross-university faculty panel guiding the BDP area and the students who enrolled.

To date, the Forum Seminars and BDPs have successfully involved more than 120 faculty from across the campus. Not one faculty member has declined an invitation to participate in a BDP panel. These faculty members are highly important for the overall success of the program because they extend the excitement of cross-disciplinary learning and research not just to undergraduate students but also to their own colleagues. Faculty who teach a forum seminar or who chair a BDP panel receive a modest research stipend. Faculty who serve on the BDP panels are listed in the program brochures and on the Web site. In addition, each spring the provost recognizes the contributions of participating faculty with a reception honoring them and their BDP students. Deans and department chairs are also invited, and more importantly, many of them come.

**Acknowledge the fundamental role of faculty.** In visioning and then creating these initiatives, it was clear that successfully engaging the faculty was essential and that any programs we developed needed to have the expertise of

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faculty at its core. In implementing the initiatives, we strive to both honor faculty expertise and use faculty time judiciously.

The development of a professional staff has been crucial to the respectful use of faculty resources. Both the Forum Seminars and the BDP are part of Connexus,<sup>1</sup> an overall effort to draw together elements of UT's vast undergraduate

curricula and to position students for an education that would better reflect the opportunities of a large research university. A small professional and support staff is in place to coordinate, administer, and evaluate all Connexus programs and to provide academic advising to students. The BDP coordinator works closely with the faculty panels, the forum seminars, the academic advisors, and the students.

In the planning stages, the BDP faculty panels and Connexus staff met several times per semester to hammer out conceptual issues and practical details. After the initial planning stages, Connexus staff took on more responsibility for the day-to-day operation of the program. Faculty panels now meet once per semester to discuss student applications and progress, consider changes to the curriculum, and plan events for BDP students. Faculty time is used only for issues that require faculty input. Faculty members join the BDP panels for three-year terms, with the option to renew at the end of their term. The use of limited terms allows us to involve a greater number of faculty in the mission of the BDPs and to avoid "burn out" for panel members.

**The Forum Seminars program**

Forum seminars are one-hour courses designed to introduce first- and second-year students to a range of disciplinary perspectives and to the value of cross-disciplinary study and research. By modeling significant connections between disciplines, the forum seminars encourage students to identify general education courses and electives that complement their interests and their majors.

The forum seminars use an innovative course design involving interactive presentations by two or three faculty from different disciplines

who present together each week. Students have the opportunity to interact with the faculty in classroom discussion and via weekly response papers. The faculty member who organizes the seminar course helps students identify recurring issues and concepts and begin to integrate the perspectives of the various disciplines. The variety of faculty members who participate in the forum seminars helps students explore a wide range of disciplines, while the thematic organization provides a rubric for understanding connections between disciplines and a context for choosing required general education courses and getting involved in research.

For example, the Science of Environmental Change, a popular forum seminar, encourages students to think about such questions as climate change, water resources, and sustainability. Journalism students taking this course are stimulated to begin thinking about scientific method, government students about the importance of biodiversity, philosophy students about the allocation of natural resources, and biology students about the politics of the Environmental Protection Agency. Ideally, all of these students are prompted to think about the interrelated roles of science, politics, and economic interests in complex environmental problems by participating faculty from the geological sciences, integrative biology, law, business, and marine sciences.

Students from all the schools and colleges have enrolled in forum seminars, which are limited to fifty students each. The first two forum seminars were piloted in spring 2001. Since then, faculty from across campus have participated in seminars on a variety of topics related to the BDPs. We first offered five forum seminars in the same semester in spring 2004; our plan is to continue to offer five per semester.

Each forum seminar has a faculty member who is the instructor of record. This person decides the curriculum and works closely with the relevant BDP panels in inviting faculty from different disciplines to participate. A detailed forum seminar handbook guides this process.

For many students, a heightened interdisciplinary awareness and knowledge of faculty across campus may be the main outcome of the forum seminar. However, for others, the forum seminar captures their imagination and interest and motivates them to use it as a foundation for participation in a BDP.

### **The Bridging Disciplines Programs**

The BDPs help students think through and organize a significant component of their undergraduate experience. The programs are designed to complement and enrich a student's major field of study through the creative use of general education requirements, electives, research, and community-based experiences. Each BDP has three components: (1) a forum seminar, (2) an individualized cluster of general education requirements and electives organized around an interdisciplinary theme, and (3) a series of research or community-based experiences connecting the course cluster to a student's major.<sup>2</sup>

To date, BDPs have been developed along six broad interdisciplinary themes: Children and Society; Environment; Ethics and Leadership; Digital Arts and Media; Population and Public Policy; and Cultures and Identities. The BDP themes and strands reflect areas of abundant course offerings, innovative faculty research, and fertile traditions of cross-disciplinary collaboration on our campus.

Each BDP is governed by a cross-disciplinary faculty panel, which sets the academic policy for the BDP and is involved in selecting students, monitoring their progress, and recommending relevant research and internship opportunities. Every semester, the faculty panel and the BDP staff plan one community-building activity that will help students in the BDPs make better connections with BDP faculty, support staff, and other students. Each BDP has its own Connexus academic adviser, who works individually with students to develop an interdisciplinary focus for their degrees. While most advisers work with students from the perspective of a single college or department, the Connexus advisers must keep abreast of opportunities and resources from across campus. To this end, the advisers as well as the Connexus research coordinator are integrated into the faculty panels, which affords them a unique opportunity to learn about cross-disciplinary collaborations and undergraduate research opportunities in the various departments and research units.

The BDPs also model an integrated approach to involvement in research, internships, and study abroad. Resources related to each of these activities have long existed on our campus; however, the BDP framework encourages students to conceptualize research

and cocurricular activities as integral elements of their formal curriculum. In fact, we refer to research and internship experiences as “Connecting Experiences” in order to emphasize that a well-chosen experience will help connect the thematic focus of the BDP to skills and concepts learned in the student’s major discipline. Students in the BDPs are encouraged to begin seeking research and cocurricular experiences early in their academic careers, with the goal of creating a coherent series of “milestone” experiences that complement and build on one another. For all of these reasons, students are required to complete a minimum of two (and ideally three) Connecting Experiences in the course of their four years at UT Austin.

### Indicators of success

For the Forum Seminar Program, our goal was to attract a broad range of students from across the schools and colleges. From spring 2001, when we piloted two forum seminars, to spring 2005, when we offered five forum seminars, approximately 1,500 students representative of the colleges on our campus have been enrolled. We also saw the forum seminars as providing valuable paths for students who were unsure of how they wanted to focus their academic study at the university and hoped to attract students who had entered their colleges as undeclared majors. Students who are undeclared constitute 38 percent of those enrolled. Other indicators of success are the growth in the number of forum seminars from two to five per semester and their appeal to students, as indicated by their full enrollment.

For the BDPs, our goal was again to attract a broad range of students, especially those not served by traditional honors programs, and to encourage these students to complete a certificate program involving research. We take as an indicator of success that the percentages of current BDP students roughly reflect the proportion of students in the various colleges. Moreover, of the 256 students who have participated in the BDPs, very few have also been enrolled in the university honors program.

In addition to our impact on individual students, these two initiatives are having an impact on the culture of our university. By involving a subset of faculty from all of the schools and colleges, they are being looked to as an example of how to accomplish

cross-disciplinary study, foster a campus-wide openness to undergraduate participation in research, and provide a site where research, curriculum, and cocurricular initiatives can finally interact.

We believe that the very factors that have shaped the character of these initiatives to strengthen undergraduate education are also the factors that provide it stability and endurance. First, the chief academic officer of the university believes in the fundamental wisdom of the initiatives and provides strong conceptual support and leadership. Second, few resources are available at our university, or at public universities in general, to provide financial support for the kinds of programs we envisioned. This reality helped us stay focused on using existing resources creatively and effectively. Finally, placing faculty and their research and creative innovation at the core not only attracts and engages faculty but also keeps the forum seminars and BDP areas current and able to evolve as fields and research agendas change and new faculty come to campus. □

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### NOTES

1. Connexus: Connections in Undergraduate Studies, an initiative of the executive vice president and provost and directed by the vice provost for undergraduate studies, provides a diverse set of academic programs and resources that traverse boundaries between colleges and disciplines and enhance the quality of undergraduate education. Additional information about this initiative can be found online at [www.utexas.edu/students/connexus](http://www.utexas.edu/students/connexus).
2. For specific examples, see [www.utexas.edu/student/connexus/bdp/index.htm](http://www.utexas.edu/student/connexus/bdp/index.htm).